

## RECTIFICATIONS IN THE NOMENCLATURE OF SOME INDO-PACIFIC LITTORINIDAE

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*Abstract.*—Three species previously placed in the subgenus *Littoraria* Griffith and Pidgeon, 1834, are reassigned to *Austrolittorina* Rosewater, 1970. Several other nomenclatorial inconsistencies involving species of Indo-Pacific Littorinidae are clarified.

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New information which has become available since the publication by Rosewater (1970) of a classification of Indo-Pacific Littorinidae, subfamily Littorininae, has resulted in changes in the subgeneric assignments of certain species. Assignments to subgenera had then to be made subjectively in some cases because of the lack of anatomical material, and decisions as to placement were based mainly on shell characteristics. As animals have now become available and have been examined with special reference to the radulae and male reproductive anatomy, certain changes have been deemed necessary.

The opportunity is also taken to rectify the taxonomy of two small Australian littorinids not included in Rosewater's (1970) revision: *Laevilittorina johnstoni* (Cotton, 1945), and *L. mariae* (T. Woods, 1876).

In addition several other changes are brought to light, all of which are summarized in Table 1.

*Littorina* (*Austrolittorina*) *acutispira* E. A. Smith, 1892.

Pl. 1, figs. 1-4; Pl. 2, fig. 5

*Littorina acutispira* E. A. Smith, 1892:487, pl. 40, fig. 3.—Rosewater, 1970:451, pl. 349, fig. 3; pl. 351, fig. 1. Types: 14 syntypes (B.M.N.H.<sup>1</sup>, 1891.11.6.216-225). Rock pools, Green Point, Watson Bay, Port Jackson, New South Wales.

*Littorina infans* E. A. Smith, 1892:488, pl. 40, fig. 4; Rosewater, 1970:452, pl. 351, fig. 2. Types:—14 syntypes (B.M.N.H., 1891.11.6.226-235). Green Point, Watson Bay, Port Jackson, New South Wales.

*Remarks.*—Rosewater (1970) tentatively placed *L. acutispira* in the subgenus *Littoraria* Griffith and Pidgeon, 1834, and *L. infans* was considered a doubtful member of the Littorinidae. Large samples collected in the vi-

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<sup>1</sup> British Museum (Natural History), London.

Table 1.

Former assignment	Corrected assignment
<i>Littorina</i> ( <i>Littoraria</i> ?) <i>acutispira</i> E. A. Smith, 1892 [Rosewater, 1970]	<i>Littorina</i> ( <i>Austrolittorina</i> ) <i>acutispira</i> E. A. Smith, 1892
<i>Littorina</i> ( <i>Littoraria</i> ?) <i>infans</i> E. A. Smith, 1892 [Rosewater, 1970]	
<i>Littorina</i> ( <i>Littoraria</i> ) <i>praetermissa</i> May, 1909 [Rosewater, 1970]	<i>Littorina</i> ( <i>Austrolittorina</i> ) <i>praetermissa</i> May, 1909
<i>Littorina paludinella</i> Reeve, 1857 [Macpherson and Gabriel, 1962]	
<i>Littorina</i> ( <i>Littoraria</i> ?) <i>sundaica</i> Altena, 1945 [Rosewater, 1970]	<i>Littorina</i> ( <i>Austrolittorina</i> ) <i>sundaica</i> Altena, 1945
<i>Pellax johnstoni</i> Cotton, 1945	<i>Laevilittorina johnstoni</i> (Cotton, 1945)
<i>Laevilittorina burni</i> Ponder, 1976	
<i>Rissolittorina mariae</i> (T. Woods, 1876) [Ponder, 1966]	<i>Laevilittorina mariae</i> (T. Woods, 1876)
<i>Littorina hisseyiana</i> T. Woods, 1876 [=Trochacea, Rosewater, 1970]	<i>Hisseyagibbula hisseyiana</i> (T. Woods, 1876)
<i>Littorina</i> ( <i>Littorinopsis</i> ) <i>incisa</i> Yokoyama, 1927 [Rosewater, 1970]	Pyramidellidae
<i>Littorina</i> ( <i>Littoraria</i> ) <i>lucida</i> Yokoyama, 1927 [Rosewater, 1970]	<i>Assimineia japonica</i> Martens, 1877

cinity of Sydney (the type-locality of both species) has shown that these two names are based on forms of one species. The types of *L. acutispira* are tall-spined, clean shells whereas those of *L. infans* are smaller, stunted, eroded specimens. Both species names were introduced simultaneously, and we, as first revisers, select *L. acutispira* Smith as the valid name to be used. The lectotype of *L. acutispira* is a more mature and better preserved individual so that there is less chance of confusion in its future identification. It is also the name recognised by Rosewater (1970) for this species, although he considered its subgeneric classification to be doubtful. The radula (Pl. 2, fig. 5) and penis (Pl. 1, fig. 4) are like those of species of the subgenus *Austrolittorina* Rosewater, 1970. The shell coloration is similar to that of *L. praetermissa*, a species shown herein to also belong to *Austrolittorina*. Three specimens are figured to illustrate the range of variation of this species (Pl. 1, figs. 1-3).

This species is found in southern Queensland, New South Wales and westernmost Victoria. It is very abundant over most of its range, living together with *L. unifasciata* Gray, 1826.

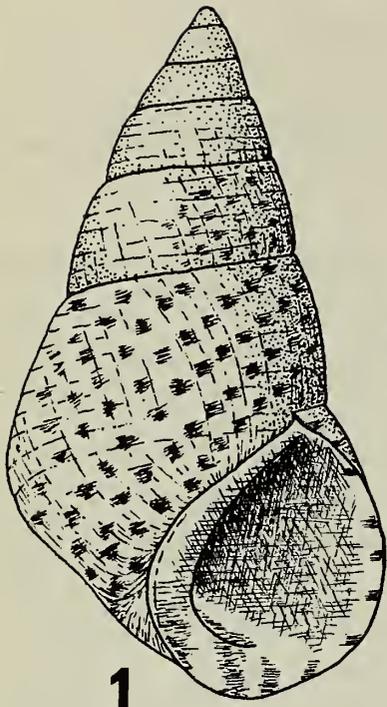
*Littorina (Austrolittorina) praetermissa* May, 1909

Pl. 3, fig. 3

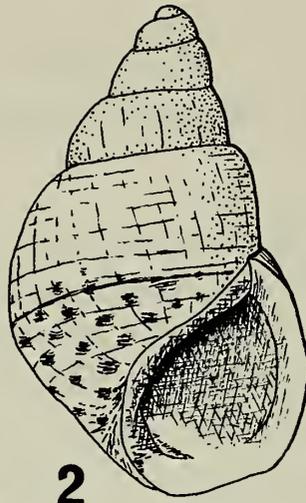
*Littorina praetermissa* May, 1909:57, pl. 6, fig. 3. Type: Tasmanian Museum, Hobart, Tasmania.

*Remarks.*—Rosewater (1970) eliminated from consideration as a littorinid taxon the name *Littorina paludinella* Reeve, 1857, used by a few early Tasmanian and Victorian workers (T. Woods, 1877:36; Pritchard and Gatliff, 1902:92) because Hedley (1913:283) had already concluded that Reeve's species is a Tasmanian hydrobiid and an earlier name for *Ampullaria tasmanica* T. Woods, 1876, and that the littorinid, sometimes called *L. paludinella* is the juvenile of *L. praetermissa*. More recently Macpherson and Gabriel (1962:89; Macpherson, 1966) have used the name *Littorina paludinella* for a small, dark littorinid, but most subsequent authorities have followed Hedley's conclusion. Macpherson and Gabriel (ibid.) stated that "Hedley confused this species with *Ampullaria tasmanica* Tenison Woods, 1876, a Tasmanian fluviatile species without the flared lip." Reference to Reeve's specimens in the British Museum (N.H.) (also examined by Hedley) and to his original figure, show that Hedley's conclusion is the only reasonable one. Macpherson and Gabriel (ibid.) noted that *Littorina paludinella* also extends into New South Wales, but as *L. praetermissa* does not occur in that state they were probably confusing it with *L. acutispira*. The juveniles of *L. praetermissa* are more uniformly black and more globular than *L. acutispira* and in some localities mostly occur low on the shore suggesting that at least part of the population undergoes an up-shore migration from about the lower mid-littoral zone to the upper littoral where the adults are normally found. A number of samples were examined and the small "paludinella" form of *L. praetermissa* were all found to be immature. This species lives sympatrically with *L. (Austrolittorina) unifasciata* in Tasmania, Victoria and South Australia, where they coexist in the upper littoral zone. *L. praetermissa* and *L. acutispira* do not appear to overlap in distribution.

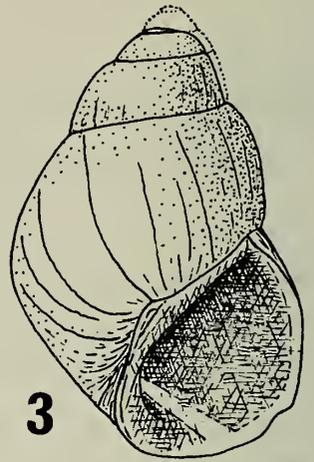
Rosewater (1970) placed *L. praetermissa* in the subgenus *Littoraria*, mainly on the basis of penial morphology which was deduced from poorly preserved material. He remarked that the radula is similar to that of *L. (Austrolittorina) unifasciata* and that there is an umbilical crescent present, although not as deeply impressed as that of *L. (Austrolittorina) unifasciata*. Both of these latter characters indicate placement in the subgenus *Austrolittorina* Rosewater and re-examination of the penis of *L. praetermissa* supports this view as it is nearly identical to that of *L. (Austrolittorina) unifasciata* (Pl. 3, fig. 3).



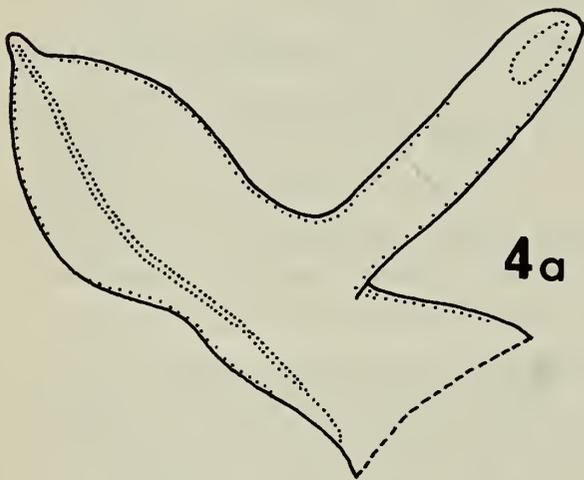
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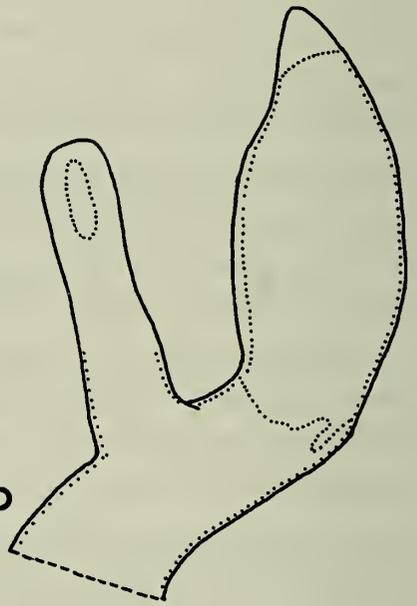
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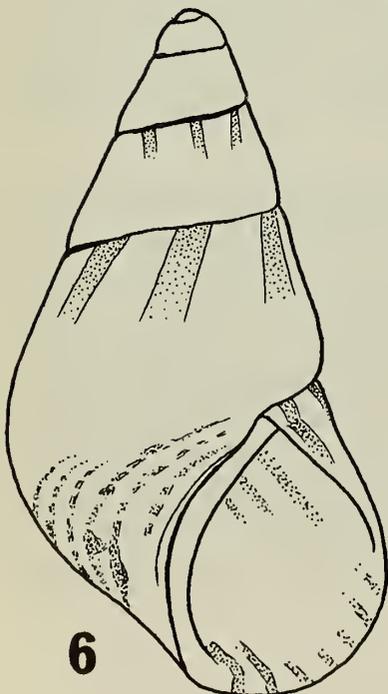


4a



4b

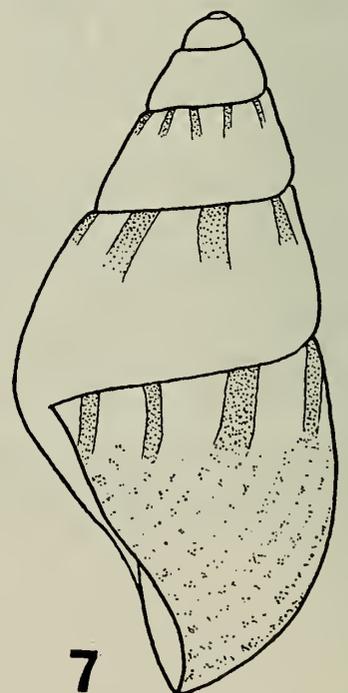
0.2 mm



6



5



7

*Littorina (Austrolittorina) sundaica* Altona, 1945

Pl. 2, figs. 1–4; Pl. 3, figs. 1, 2

*Littorina (Melaraphe) sundaica* Altona, 1945:151, fig. 2. Type: Holotype (Rijksmuseum van Natuurlijke Historie, Leiden, no. 52038. Tjilaoet Eureun, South Coast of Java).

*Remarks.*—Rosewater (1970) placed *Littorina sundaica* Altona, 1945, in the subgenus *Littoraria* which he characterized as having a penis with a basal flap but no apparent accessory glands. The members of the subgenus were said not to have white apertural bands, a notable characteristic of *L. sundaica* which should have eliminated it. It was placed in *Littoraria* on the basis of shell characteristics but questionably, nevertheless, pending anatomical evidence.

Preserved specimens only recently received from Arie Budiman, Museum Zoologicum Bogoriense, which he collected at Pangandaran, Java, have permitted examination of the radula and penis of this species (Pl. 3, figs. 1, 2).

Several characteristics quite clearly relate *L. sundaica* to the subgenus *Austrolittorina*, including a penis with a basal enlargement containing a penial gland and accessory flagellum (Rosewater, 1970:467) and a radula with a rather narrow central tooth. The flattened columella with crescent-shaped area on adjacent shell that is characteristic of the type-species of *Austrolittorina*, *L. unifasciata*, is missing or reduced in some other members of the subgenus including *L. sundaica*.

The several specimens from Java and another specimen from Bali also change somewhat the picture of the species gained from the few specimens available previously. Of 15 specimens measured, the lengths varied from 4.5 mm to 7.2 mm, widths from 2.4 to 3.6 mm, and the average obesity of the specimens was .52 compared with .55 in the 4 specimens available previously (Rosewater, 1970). New localities for the species are: Pangandaran (on the mid to western middle of the south coast), Java (A. Budiman, 1976; USNM<sup>2</sup>) and Sanur, Bali (F. G. Thompson, 1971, USNM).

Sexual dimorphism does not seem strikingly apparent in the shells of the

<sup>2</sup> National Museum of Natural History, Washington.

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Plate 1. Figs. 1–4. *Littorina (Austrolittorina) acutispira*: 1–3, Shells to show range of variation; from Bottle and Glass Rocks, Vaucluse, Sydney, New South Wales, Australia (1) 6.0 × 3.2 mm (2) 4.3 × 2.6 mm (3) 3.8 × 2.6 mm. (Australian Museum, C.114545); 4a, b, Penis from adult specimen collected at Edwards Beach, Balmoral, Sydney, New South Wales, Australia, Nov. 1978 (Australian Museum C.112910). Fig. 5. *Laevittorina mariae*: penis from adult ♂, Pirates Bay, Eaglehawk Neck, S. E. Tasmania, April, 1970 (Australian Museum C.112911). Figs. 6, 7. *Laevittorina johnstoni*: shell of topotype, Ellensbrook, south Western Australia, 5.8 × 3.2 mm (Australian Museum C.114546).

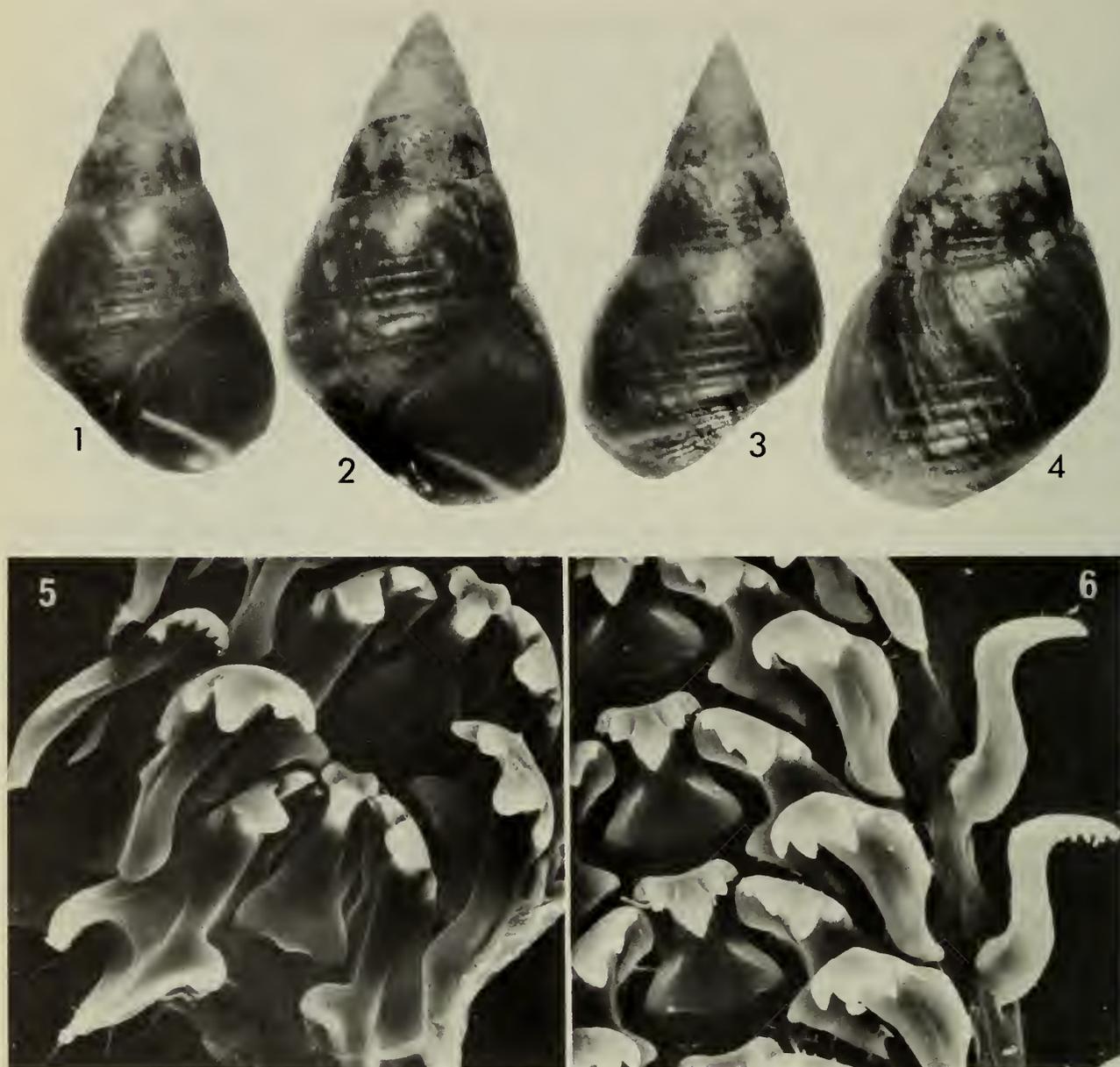


Plate 2. Figs. 1-4. *Littorina* (*Austrolittorina*) *sundaica*: shells, Pangandaran, Java, Indonesia (USNM 766856); figs. 1, 3, ♂  $5 \times 2.6$  mm; figs. 2, 4, ♀  $5.6 \times 2.9$  mm. Fig. 5, *Littorina* (*Austrolittorina*) *acutispira*: radula  $\times 1300$ , Edwards Beach, Balmoral, Sydney, New South Wales, Australia (Australian Museum, C.112910). Fig. 6. *Laevilittorina mariae*: radula  $\times 1400$ . Pirates Bay, Eaglehawk Neck, S. E. Tasmania, April 1970 (Australian Museum C.112911).

species although the available samples are not large. One male was found among 9 specimens examined (detected by the presence of a penis; females by the absence of a penis). In general, apertures of females appear proportionally wider.

Spiral sculpture appears more marked in the additional material now available and ranges from a few spirally incised furrows most noticeable on the body whorl above the periphery, to a fairly uniform spirally furrowed con-

dition (see Pl. 2, figs. 1–4). Other comments in the description made by Rosewater (*ibid.*) still apply.

*Laevilitorina johnstoni* (Cotton, 1945)

Plate 1, figs. 6, 7

*Pellax johnstoni* Cotton, 1945:164, pl. 12, figs. 3, 4. Type: Holotype (South Australian Museum, D.14200). Ellenbrook [=Ellensbrook], south Western Australia.

*Laevilitorina burni* Ponder, 1976:106, text-fig. 8; pl. 1, fig. 1; pl. 2, figs. 5, 6. Types: Holotype (Australian Museum, Sydney, C.100919, with 9 paratypes; 3 paratypes Western Australian Museum). Yallingup, south Western Australia.

*Remarks.*—This species was first introduced as a member of the Phasi-  
anellidae, presumably because of its striking color pattern. It closely resem-  
bles *Eatoniella (Pellax) flammulata* (Hutton, 1878), the type-species of *Pel-  
lax* Finlay, 1927 (= *Phasianella huttoni* Pilsbry, 1888, an unnecessary  
replacement name) and consequently was tentatively regarded as a member  
of the Eatoniellidae by one of us (W.F.P.) pending examination of the ani-  
mal. The radula and operculum of some half-grown specimens showing the  
characteristic color pattern of *johnstoni* proved to be identical to those of  
*Laevilitorina burni* Ponder, 1976. Comparison of all the material now avail-  
able has shown that *L. burni* and *P. johnstoni* are the same species and can  
be tentatively included in *Laevilitorina* Pfeffer, 1886, until its generic po-  
sition can be confirmed by the examination of its penis. This species appears  
to be confined to south Western Australia and South Australia.

*Laevilitorina mariae* (T. Woods, 1876)

Pl. 1, fig. 5, Pl. 2, fig. 6

*Rissoa (Cingula) mariae* T. Woods, 1876:147. Types: 4 syntypes (1 badly  
broken) (Tasmanian Museum, Hobart, TM7800/E459). King's Island  
(Bass Strait, southern Australia).

*Remarks.*—Ponder (1966) included this species in *Rissolittorina* Ponder,  
1966 on shell characters, but examination of the animal has shown that it  
is best retained in *Laevilitorina* where it was placed by Hedley (1906).  
Ponder (1976) showed that the type-species of *Laevilitorina*, *Littorina cal-  
iginosa* Gould, 1849, has a simple penis whereas the penis of *Rissolittorina  
alta* (Powell, 1940) has a long accessory appendage (Ponder, 1966). The  
radula (Pl. 2, fig. 6) and penis (Pl. 1, fig. 5) of *L. mariae* are illustrated. This  
species is common in Tasmania and Victoria, extends into South Australia  
and is usually uncommon in New South Wales.

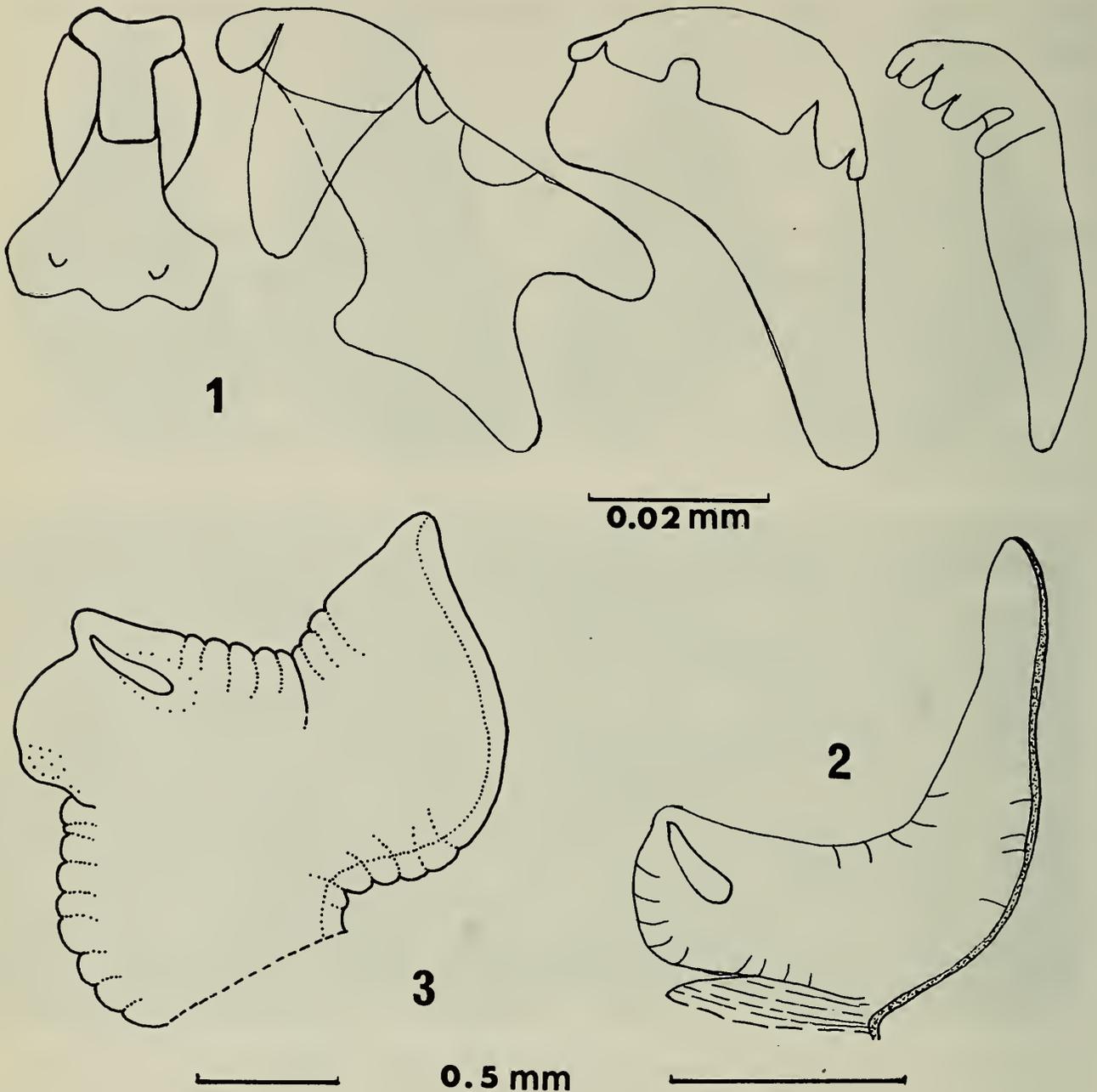


Plate 3. Figs. 1, 2. *Littorina (Austrolittorina) sundaica*: 1, Radula; 2, Penis, both taken from same male specimen ( $5 \times 2.6$  mm) from Pangandaran, Java, Indonesia (USNM 766856). Fig. 3. *Littorina (Austrolittorina) praetermissa*: penis from adult ♂, Whisky Bay, S.W. side Wilson's Promontory, Victoria, Australia, Dec. 1971 (Australian Museum C. 112912).

#### Additional Notes

Other changes in status of Indo-Pacific Littorinidae brought to our attention since Rosewater's (1970) review are:

*Littorina hisseyiana* T. Woods, 1876: Rosewater (1970:476) correctly concluded that this species is a trochacean. It can be added that Kershaw

(1955:291) has erected for it the genus *Hisseyagibbula* which he places in the Trochidae.

*Littorina incisa* Yokoyama, 1927: Rosewater (1970:466) included this species in *Littorinopsis*, but according to T. Habe (*in litt.*, 1971) it is a member of the Family Pyramidellidae.

*Littorina lucida* Yokoyama, 1927: Rosewater (1970:453) included this species in the subgenus *Littoraria*. According to T. Habe (*in litt.*, 1971) it is not a littorinid but is the species *Assimineia japonica* Martens, 1877.

### Acknowledgments

Dr. T. Habe provided information on the status of *L. incisa* and *L. lucida*. Dr. C. Roper contacted A. Budiman for one of us (JR) who kindly provided the specimens of *L. sundaica*. We thank Mr. E. K. Yoo who prepared the radulae for S.E.M. examination and Ms. B. Duckworth and Mr. Yoo for assistance in preparing some of the line drawings and plates.

### Literature Cited

- Altena, C. O. van Regteren. 1945. Report upon a collection of Recent shells from Java.—Zoologische Mededeelingen, Leiden, 25:140–154.
- Cotton, B. C. 1945. Southern Australian Gastropoda. Part 1. Streptoneura.—Trans. R. Soc. S. Aust. 69(1):150–171.
- Gray, J. E. 1826. In P. P. King, Narrative of a Survey of the Coasts of Australia, vol. 2, Appendix B, pp. 474–496.
- Hedley, C. 1906. Studies on Australian Mollusca. Part 9.—Proc. Linn. Soc. New South Wales 30:520–546.
- . 1913. Studies on Australian Mollusca. Part 11.—Proc. Linn. Soc. New South Wales 38:258–339.
- Kershaw, R. C. 1955. A systematic list of the Mollusca of Tasmania, Australia.—Pap. Proc. Roy. Soc. Tasmania 89:289–355.
- May, W. L. 1909. Additions to the Tasmanian molluscan fauna.—Pap. Proc. Roy. Soc. Tasmania for 1908:53–58, pl. 6.
- Macpherson, J. H. 1966. Brachiopoda and Mollusca.—Mem. Nat. Mus. Vict. 27:199–284.
- Macpherson, J. H. and C. J. Gabriel. 1962. Marine Mollusca of Victoria, pp. i–xv, 1–475.—Melbourne University Press.
- Ponder, W. F. 1966. The New Zealand species previously known as *Zelaxitas* Finlay, 1927 (Mollusca, Gastropoda).—Rec. Domin. Mus., Wellington 5(17):163–176.
- . 1976. Three species of Littorinidae from southern Australia.—Malac. Rev. 9:105–114.
- Pritchard, G. B. and J. H. Gatliff. 1902. Catalogue of the Marine Shells of Victoria. Part 5.—Proc. Roy. Soc. Victoria (n.s.) 14(2):85–138.
- Reeve, L. A. 1857–58. Monograph of the Genus *Littorina*.—Conchologia Iconica, vol. 10, *Littorina*, plates 1–16 (1857), plates 17–18 (1858).
- Rosewater, J. 1970. The family Littorinidae in the Indo-Pacific. Part 1. The subfamily Littorininae.—Indo-Pacific Mollusca 2(11):417–506.

- Smith, E. A. 1892. Descriptions of new species of shells from New South Wales, New Guinea, the Caroline and Solomon Islands.—*Proc. Zool. Soc. London* for 1891:486–491.
- Woods, J. E. Tenison. 1876. Description of new Tasmanian shells.—*Pap. Proc. Roy. Soc. Tasmania* for 1875:134–162.
- . 1877. Census, with brief descriptions of the marine shells of Tasmania and the adjacent islands.—*Pap. Proc. R. Soc. Tasmania* for 1877:26–57.

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